

REMARKS

Claims 1, 3, 5, 6, 8-12 and 14-26 are pending. Claims 2, 4, 7, 11 and 13 have been canceled.

Claims 1, 10, 12 and 24 have been amended to recite that the acidic group is a carboxyl group. Support for this subject matter can be found in canceled claims 2 and 11.

Claim 8 has been amended to recite details of the product of the process of claim 10.

New claim 26 is supported by the disclosure at page 19, line 20 bridging to page 20, line 7 of the specification. No new matter is added by way of the above-amendment.

I. Interview

Applicants note with appreciation that the Examiner conducted a personal Interview with Applicant's representative, Garth M. Dahlen, Ph.D., Esq. on December 16, 2009. The Examiner was helpful in explaining the outstanding issues. During the Interview, Applicants discussed proposed amendments to claims 1 and 10. The above-amendment to claims 1 and 10 are essentially the same as those discussed during the Interview. The Examiner indicated that the above-amendment to claims 1 and 10 would distinguish the present invention from the teachings of Jayaraman et al. (discussed in detail below.)

The Examiner also requested that claim 8 be amended to recite a more complete description of the resin pattern film. The Examiner will note the above-amendment to claim 8 which has been made in response to the Examiner's request.

II. 35 U.S.C. §§ 102 and 103 Rejections

The Examiner has imposed the following rejections:

- A) Claims 8-9 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Akaiwa et al. (US Patent 5,721,990);
- B) Claims 1-3, 5-6, 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jayaraman et al. (US Patent 6,451,499) in view of Imai et al. (US Pg-Pub 2002/0012880); and

- C) Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jayaraman et al. (US Patent 6,451,499) in view of Imai et al. (US Pg-Pub 2002/0012880) as applied to claim 16 and in further view of Suwa et al. (US Patent 6,692,887).

Applicants respectfully traverse Rejections A-C.

Akaiwa et al.:

With respect to Rejection A, the Examiner notes that claims 8 and 9 are in the product-by-process format. During the December 16, 2009 Interview, the Examiner indicated that these claims would be allowed if claim 8 is amended to recite more details of the final product. In response, the Examiner will note that Applicants amended claim 8 to recite details of the product, which have written description support in the specification.

On a side note, Applicants maintain that claim 8 did not have to be amended to recite the description of the product to be patentable over Akaiwa et al. Applicants are aware of the description in MPEP 2113, which basically states that for the process steps to be given patentable weight, Applicants need to show that the process steps recited in the claims would result in a product having a structural distinction from the product in the prior art.

Akaiwa et al. disclose a camera image transfer device which includes a liquid crystal display device capable of forming transparent pattern areas representing data characteristic of forming transparent pattern areas representing data characters to be transferred to the photographic film loaded in the camera and optics to guide the optical beams passing through the transparent pattern areas of the liquid crystal device to the photographic film. Although Akaiwa et al. disclose to apply a transparent photoresist to the transparent pattern forming areas (column 3, lines 51 to 52 of Akaiwa et al.), Akaiwa et al. are silent about the resin composition forming the photoresist of their invention. Only the resins to which Akaiwa et al. refer are methacrylic resin, polycarbonate resin, or ABS resin (column 7, lines 61 to 62 of Akaiwa et al.). However, these resins are disclosed as examples which can be used to make transparent cover 81 or fixture 8 and not as the resins to make the resist and are clearly different from the product obtained by the process of claim 10. As the present claim 8 defines that the transparent resin pattern film is formed in accordance with the process of claim 10, the transparent film defined in claim 8 should

have a particular composition inherently owned by a product obtained by the process of claim 10. As Akaiwa et al. are silent about the resin composition forming the resist, it is clear that Akaiwa et al. do not teach or suggest the positive pattern resin film obtained by the process of claim 10.

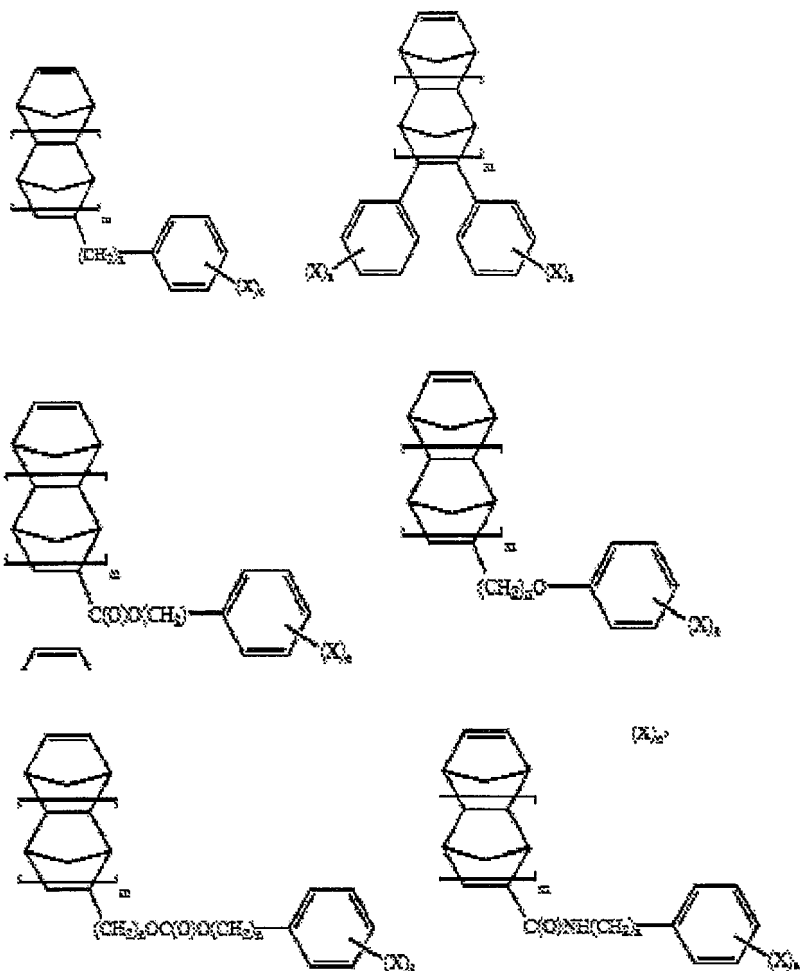
It is evident that the inventive transparent resin pattern film of claim 8 has structural features which cannot be anticipated by Akaiwa et al., which is only described as being "transparent." The inventive transparent resin pattern film of claim 8 must have at least an alicyclic resin soluble in an alkali which is hydrogenated. This feature is neither taught nor suggested by Akaiwa et al.

The advantage of the pattern film obtained by the process of claim 10 is clearly seen from the results of Examples 1 to 4 in comparison with the results of Comparative Examples 1 and 2 summarized in Table 2 on page 39 of the specification.

Thus, Applicants consider that presently claimed invention in claim 8 is not only novel but also non-obvious over Akaiwa et al. Claim 9 which depend on claim 8 is also novel and non-obvious over Akaiwa et al. Reconsideration and withdrawal of Rejection A are respectfully requested.

Jayaraman et al:

With respect to Rejections B and C, the Examiner notes that inventive claim 1 recites that "the alicyclic resin soluble in an alkali is a ring-opening polymer having an acidic group." For this feature, the Examiner relies on Jayaraman et al. for teaching monomers of formula II having the following structures:



Wherein X may be a group $-OR^{14}$ wherein R^{14} may be a hydrogen.

In other words, the Examiner has taken the position that the hydroxyl group on the phenyl rings are acidic.

In response, Applicants have amended claims 1 and 24 to recite that the **acidic group is a carboxyl group**. As such, significant patentable distinctions exist between the present invention and the teachings of the cited references.

Furthermore, Applicants respectfully submit that the process limitations in the inventive product-by-process claims should be given patentable weight, since the process limitations

necessarily result in a product which is structurally distinct from the product of Jayaraman et al.
On this matter, the Examiner states:

The limitation that the alicyclic resin "is obtained by ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group in a presence of a catalyst comprising ruthenium, followed by hydrogenating an obtained polymer, wherein the catalyst comprising ruthenium is a catalyst comprising as main component an organoruthenium compound in which a neutral electron-donating ligand is coordinated" is a product-by-process limitation.

While the claim is directed to the process of obtaining the alicyclic resin, the patentability is determined by the alicyclic resin itself. The resin of Jayaraman et al. is a ring-opening polymerization alicyclic resin with an acidic group which is identical or, in the alternative, renders obvious the resin (A) of the instant application.

See pages 5-6 of the Office Action.

Also, in column 14, lines 31 to 40 of Jayaraman et al., the following is disclosed:

When polymerizing the monomers set forth under Formulae I to III wherein R^1 to R^{12} is selected from a substituent that contains a hydroxyl moiety, it is preferable (particularly when the Group VIII metal catalysts are employed) to protect the hydroxyl moiety during the polymerization reaction. The protecting group serves to protect the functional group containing the hydroxyl moiety from undesired side reactions or to block its undesired reaction with other functional group or with the catalysts employed to polymerize the polymer. (emphasis added)

Considering from the clause in the parenthesis cited above: "particularly when the Group VIII metal catalysts are employed", it is clear that Jayaraman et al. particularly prefer to protect the hydroxyl moiety during the polymerization reaction even when a ruthenium catalyst is used. It is noted here that ruthenium is one of the Group VIII metals. Indeed, although Jayaraman et al. disclose that in one ROMP embodiment the polycyclic monomers of the invention can be polymerized in the presence of a single component ruthenium or osmium metal carbene complex catalyst (see column 12, lines 27 to 30 of Jayaraman et al.), Jayaraman et al. fail to disclose any Example of a polymer obtained by using an alicyclic olefin monomer having an acidic group

which is un-protected and a ruthenium catalyst in any portion of the description. In column 12, line 66 bridging to column 13, line 2 of Jayaraman et al. state:

Alternatively, and preferably, the monomers of this invention are addition polymerized in the presence of a single or multicomponent catalyst system comprising a Group VIII metal ion source (preferably palladium or nickel).

Also, in all of the Examples of Jayaraman et al., it is clear that the substance of the invention of Jayaraman et al is directed to a polycyclic polymer obtained by polymerizing a polycyclic monomer having a protected acid group in the presence of a catalyst system comprising a Group VIII metal ion source. It is noted that such a technical solution is referred to in one of the prior art documents discussed in the present specification at page 2, lines 7 to 14 as follows:

In response to the above requirement, compositions comprising an alicyclic olefin resin soluble in an alkali which is obtained by ring-opening polymerization of a norbornene-based monomer having an ester group, followed by hydrogenation of the obtained polymer and hydrolysis of the ester group portion to form bonded carboxylic group, an acid-generating agent and a crosslinking agent, are proposed (Japanese Patent Application Laid-Open Nos. Heisei 10(1998)-307388 and Heisei 11(1999)-52574).

On page 2, line 15 bridging to page 3, line 14 of the present specification, the following is disclosed:

However, it has been confirmed by the present inventors that the resin films formed by using the radiation sensitive resin compositions described in the above two patent publications have poor storage stability and property for development although permittivity, water absorption, flatness, solvent resistance and dimensional stability under heating are excellent. Since a radiation sensitive resin composition is used in an industrial process, in general, after the composition is prepared in a suitable vessel and, then, transferred to an apparatus for applying to a substrate or the like, the storage stability of the composition is very important.

As the result of intensive studies based on the above knowledge by the present inventors to obtain a radiation sensitive resin composition which is suitable for industrial process, it was found that an alicyclic olefin resin soluble in an alkali could be obtained without the hydrolysis step when an alicyclic olefin monomer having an acidic group such as carboxyl group was polymerized in the presence of a catalyst containing ruthenium (a ruthenium catalyst) and the obtained polymer was hydrogenated in place of obtaining, as specifically described in examples of the above publications, an alicyclic olefin resin by ring-opening polymerization of an alicyclic olefin monomer having an alkyloxycarbonyl group in the presence of a catalyst containing tungsten (a tungsten catalyst), followed by hydrogenation of the obtained polymer and hydrolysis of the hydrogenation product to obtain carboxylic acid, and that the resin obtained by the present inventors exhibited the storage stability suitable for the industrial process and provided a radiation sensitive resin composition exhibiting an improved property for development.

On page 17, line 23 bridging to page 18, line 7 of the present specification, it is still further disclosed with respect to the hydrogenation catalyst as follows:

Since the carbon-carbon double bond can be hydrogenated selectively without side reactions such as modification of functional groups, the noble metal complex catalysts having a noble metal such as rhodium and ruthenium are preferable, and ruthenium catalysts in which compounds exhibiting a great electron-donating property such as heterocyclic carbene compounds having nitrogen atom and phosphines are coordinated are more preferable, among the above hydrogenation catalysts.

Since the ruthenium catalyst works also as the polymerization catalyst as described above, the hydrogenation can be conducted successively after the ring-opening polymerization. In this case, the activity of the ruthenium catalyst can be enhanced by adding a catalyst modifier.

Stated differently, the catalyst comprising ruthenium is not only effective in the ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group, but also is very advantageous because the same catalyst can work as the

hydrogenation catalyst in the hydrogenation step following the ring-opening polymerization. Such a particular and prominent effect is not disclosed in Jayaraman et al.

Applicants respectfully submit that Jayaraman et al. teach a polymer which is structurally distinct from the inventive polymer since Jayaraman et al. use protective groups on the hydroxyl groups. There is no teaching or suggestion regarding how to run the reaction without protective groups.

As such, significant patentable distinctions exist between the present invention and the teachings of Jayaraman et al.

Imai et al.

With respect to Imai et al., the Examiner states:

The ether-bond containing olefinic unsaturated compound of Imai et al. acts as a crosslinker (see par. 0133) and it is equivalent to crosslinking agent (C) of the instant application (see page 23, lines 7-14 of the specification).

See the first paragraph of page 7 of the outstanding Office Action.

Applicants have already addressed this in the following passage in the June 15, 2009 Amendment:

The crosslinked structure formed by the crosslinking agent in the presently claimed invention is not cleaved by irradiation with an active energy beam but is maintained even after being irradiated with an active energy beam followed by a developing step in order that the resin pattern formed on a substrate can be cured by heating (post-baking) after the developing step (see page 29, lines 21 to 24 of the specification). Thus, the crosslinker of JP-A-8-94827 or Imai et al. which forms a crosslinked structure which can be cleaved by irradiation with an active energy beam cannot be used as the crosslinking agent of the presently claimed invention. Furthermore, it is noted that Imai et al. of course fail to teach or suggest to use an alicyclic olefin resin soluble in an alkali which is a ring-opening polymer having an acidic group which is obtained by ring-opening polymerization of a polymerizable monomer comprising an alicyclic olefin monomer having an acidic group in a presence of a catalyst comprising as a main component an organoruthenium compound in which a neutral electron-donating ligand is

coordinated as defined in the presently claimed invention. (See page 18, beginning at line 6 of the June 15, 2009 Amendment).

However, the Examiner has not responded to these comments in the outstanding Office Action.

Furthermore, Suwa et al. is cited to teach the limitations of claims 17-19. In view of the fact that Suwa et al. fail to cure the deficiencies of Jayaraman et al. and Imai et al, significant patentable distinctions exist between the present invention and the combined teachings of Jarayaman et al, Imai et al. and Suwa et al. Reconsideration and withdrawal of Rejections B and C are respectfully requested.

II. New Claim 26

With respect to new claim 26, this claim is further distinguished from the cited references. The Examiner relies on Jayaraman et al. for teaching the alicyclic olefin monomer. Applicants respectfully submit that Jayaraman et al. fail to teach or suggest any of the alicyclic olefin monomer as recited in new claim 26.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Conclusion

In view of the above remarks, it is believed that claims are allowable.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq., Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: January 11, 2010

Respectfully submitted,

By 

Marc S. Weiner

Registration No.: 32,181

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Road, Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

GARTH M. DAHLEN
USPTO #43,575